

CLAIMS:

1. Equipment for music digitalization, storage, access and listening, comprising:

a digital music server (1), a music digitizing station (2), and a variable and
5 convenient number of listening stations (3), the listening stations (3) being interlinked to the
server (1) and to the digitizing station (2) through a local network (4), said digital music
server (1) being a microcomputer including a large capacity hard disk for storing the
digitized songs, and to centralize, in a database, all of the information in the digitized CDs,
wherein the server (1) is provided with a control software that allows to control the entire
10 operation of the listening stations (3), through commands and messages defined between the
server (1) and the listening stations (2), which control software embodies a function that
allows certain listening stations (3), on a configurable basis, to reproduce only particular
CDs; said server (1) being also provided with a local server maintenance software that
allows the deletion of CDs or song files corresponding to the digitized tracks, the updating
15 of data related to CDs in the database, the listing of digitized CDs, the generation of a
summary of the changes made during a certain period of dates for similar systems in other
locations be capable of being updated, the updating of the local system through changes
made in a system of other location, the listing of the statistic of access to CDs by the
listening stations, so that it may be possible to know which were the more accessed tracks
20 or CDs during a period of dates, or to know which were the more used listening stations (3),
and to obtain the automatic system update through an autoexec CD-R containing CDs input
and output data and the respective song files; it is further provided a central (or remote)
server (1A) with a large capacity hard disk also destined to store the digitized music, and to

centralize, in a database, all of the information in the digitized CDs, and said central (or remote) server (1A) may be accessed by local servers (1) and by digitizing stations (2), via WAN (wide area network) or via Internet (4A); the local server (1) being provided with a download software that brings, from the central (or remote) server (1A), the information in the CD and its song files, for CDs not existing in the local server (1), and which have been requested for listening at the listening stations (3), said software enabling also the search in said central (or remote) server (1A), in a preset time, of all CDs the bar code of which are enrolled in a list available at the local server (1); said local server (1) being provided with a program for updating statistic data (statistic upload software), the function of which is to input the statistic data of the listening stations usage (3), collected and stored in the local server (1), in the central (or remote) server (1A), which software automatically sends the statistic data to the central (or remote) server (1A) in a preset time, provided that data already sent in previous times shall not be sent any longer and may be discharged from the local server (1); the digitizing station (2) is also provided with a program for updating the data (upload software), which enables to update the central (or remote) server (1A) with the information and song files in CDs digitized and recorded in the local server (1) or in the very digitizing station (2), which software allows the immediate updating, as soon as a CD is digitized, or the updating in a preset time, including also the option to check whether a CD is already present in the central (or remote) server (1A), and by then, to not carry out the updating, or to update regardless such a fact; the digitizing station (2) is also provided with a central or remote server maintenance software, in a manner analog to the local server maintenance software embodied in the local server (1); the listening station (3) is a hardware apparatus that requires, for it to work, only a firmware (microcontroller program) that

controls the hardware resources, and that communicates with the server program, and is formed by the modules A, B, C, and D, where the module A consists of an interface for keyboard/display (5), where the keyboard and the LCD are connected, a serial interface (6), where the bar code reader is connected (scanner), a microcontroller (7) that is the processing unit that executes the instructions of the firmware contained in the internal flash memory, an local network interface (8), where the Ethernet local network (4) is connected and the RAM (9) used by the firmware as a data area; the module B consists of a keyboard (11), LCD (12), bar code reader (scanner) (13), and an earphone (14), and forming an independent physical module, because it is in direct contact with the user; the module C consists of an audio decoder, a digital/analog (D/A) converter, and an amplifying circuit for stereo audio output, the earphone (14) of module B being connected to that module C; the module D being a power supply that provides the required voltages to modules A, B, and C, and has a power supply cable (10).

2. The equipment for music digitalization, storage, access and listening in accordance with claim 1, wherein there are a plurality of digital music servers (1) and a plurality of digitizing stations (2).

3. The equipment for music digitalization, storage, access and listening in accordance with claim 1, wherein one microcomputer is the digital music server (1) and the digitizing station (2) simultaneously.

4. The equipment for music digitalization, storage, access and listening in accordance with the claim 1, wherein providing the central (or remote) server concept (1A) was included, the purpose of which is to be a repository for all digitized CDs, that may be accessed by the local servers (1) of the stores, and also by digitizing stations (2), via WAN
5 (wide area network) or via Internet (4A), in order to bring to the stores the CDs demanded by users, and also to update the central server with the CDs digitized in the digitizing stations located in the local network environment of stores or their locations.

5. The equipment for music digitalization, storage, access and listening in
10 accordance with claim 1, wherein the local network is implemented by cables with conducting and connecting wires linking the involved equipment, or even by an electromagnetic wave communication means.

6. The equipment for music digitalization, storage, access and listening in
15 accordance with claim 1, wherein the local server maintenance software to be installed in the local server (1) and the central (or remote) server maintenance software to be installed in the digitizing station (2).

7. The equipment for music digitalization, storage, access and listening in
20 accordance with claim 1, wherein both the local server maintenance software and the central (or remote) server maintenance software is installed in the local server (1).

8. The equipment for music digitalization, storage, access and listening in accordance with claim 1, wherein both the local server maintenance software and the central (or remote) server maintenance software is installed in the digitizing station (2).

5 9. A process for music digitalization, storage, access and listening, the process for controlling listening stations (3) executed by a program of a program controlled apparatus comprising the steps of:

 i. waiting for a connection request from one of the a listening stations (3);

 ii. requesting acceptance and establishment of a connection between the server (1)
10 and the listening station (3);

 iii. sending of commands “remove cursor”, “clean display”, “enable the keyboard”
and “light up the display” to the listening station;

 iv. sending a command to the listening station for showing the message “Read the
bar code” on the display;

15 v. waiting for the bar code sent by the listening station;
 vi. sending, upon the receipt of the bar code, a command for showing the message
“Wait...” on the display;

 vii. checking whether the CD the bar code of which was received exists in the local
server;

20 viii. sending the message “CD not registered” to the listening station when the CD
the bar code which was received does not exist in the local server;

ix. checking whether the CD should be searched in the central (or remote) server, if no, the flow comes back to the sending step of step iv., where the message “Read the bar code” is sent;

x. checking whether the CD should be searched in the central (or remote) server, if yes, then checking whether the CD should be immediately brought from the central (or remote) server;

xi. saving the information in the CD, if CD is not immediately brought from the central (or remote) server, in a list of CDs to be brought by the download software in a preset time, and the flow returns to the sending step of step iv.;

xii. if the CD has to be immediately brought from the central (or remote server), then sending an advice, together with the required information to the download software for it to search the CD in the central (or remote) server, after which the flow proceeds in the sending step of step iv.;

xiii. if the CD the bar code exists in the local server, then accessing the database and obtaining all information associated to the bar code received;

xiv. sending the command for adjusting the sound volume and, at the same time, showing the message formed by artist, track number, elapsed reproduction time, and the volume value on the display;

xv. obtaining a song file and sending a command for storing the first block (with that aggregated block) and, at the same time, to start song reproduction (play);

xvi. waiting for the message request for the next block sent by the listening station;

xvii. upon the receipt of such a message, checking the existence of a next song block to be sent:

xviii. if next song block to be sent exists, then sending the command for storing the aggregated song block and returning to the waiting step of step xvi.;

5 xix. if the next song block to be sent does not exist, then sending the command “no more song blocks”;

xx. waiting for some asynchronous message from the listening station (3);

xxi. receiving an asynchronous message, and checking whether it is a “bar code”;

10 xxii. if asynchronous message is a “bar code”, then sending a command for stopping song reproduction and to returning to the sending step of step vi.;

xxiii. if the asynchronous message is not a “bar code”, then checking whether it is “song end” and, if yes, then returning to the sending step of step iv.;

xxiv. if the message is not “song end”, then checking whether the same is “stop”;

15 xxv. if message is “stop”, then sending the command for stopping song reproduction and returning to the sending step of step iv.;

xxvi. if the message is not “stop”, then checking whether the same is “next track” or “previous track”;

xxvii. if the message is “next track” or “previous track”, then sending the command for stopping song reproduction;

20 xxviii. sending the command for showing the artist, the number of the track corresponding to the next track or the previous track, the elapsed reproduction time and the volume value on the display, and return to the obtaining step of step xv.;

xxix. if the message is not “next track” or “previous track”, then checking whether the same is “volume+” or “volume-”;

xxx. if the message is “volume+” or “volume-“, then sending the command for adjusting the new volume value, increasing (if “volume+”) or decreasing (if “volume-”) and, at the same time, showing that value on the display;

xxxi. if the message is not “volume+” or “volume-”, then checking whether the asynchronous message is a request for updating the elapsed reproduction time;

xxxii. if the asynchronous message is a request for updating the elapsed reproduction time, then sending the command for showing the updated elapsed time (which value to be aggregated to the command) on the display, or, if not, then returning to the waiting step of step xx..

10. A process for music digitalization, storage, access and listening, the process executed by a listening station program of a program controlled apparatus comprising the steps of:

- i. performing a connection request with the server (1);
- ii. accepting the connection, and continuing to the next step iii.;
- iii. waiting for the command from the server (1);
- iv. upon receiving such a command, checking whether the same is “stop”, “remove cursor”, “clean the display”, “enable the keyboard”, “light the display up”, “adjust the volume” or “show message”;

v. if received command is “stop”, “remove cursor”, “clean the display”, “enable the keyboard”, “light the display up”, “adjust the volume” or “show message”, then executing the received command;

vi. checking whether there is an asynchronous message to be sent to the server (1);

5 vii. if there is an asynchronous message, then sending that message and returning to waiting step of step iii., or, should there not be any asynchronous message, then returning to the waiting step of step iii.;

viii. if the received command is not one of those mentioned in step iv., then checking whether the same is “send the bar code”;

10 ix. if the received command is “send the bar code”, then checking the existence of a bar code to be sent, and, if not, then waiting for a bar code to be sent, and if yes, then proceeding to the next step;

x. if there is a bar code, then sending the same and returning to the waiting step of step iii.;

15 xi. if the command is not “send a bar code”, then checking whether the same is “store the first song block and start reproduction”;

xii. if the command is not “store the first song block and start reproduction”, then checking whether the command is “store the song block”;

20 xiii. if the command is “store the song block”, then executing the received command and going to the checking step of step xvi.;

xiv. if the command is not “store the song block”, then checking whether the same is “no more song blocks”, and, if yes, then proceeding to the checking step of step xvi. , and, if not, then returning to the checking step of step xi.;

xv. if the received command is “store the first song block and start reproduction”,
5 then executing the same command received and proceeding to the next step;

xvi. checking whether there is an asynchronous message to be send to the server (1), and, if not, then waiting for any asynchronous message;

xvii. checking whether the asynchronous message is “update the elapsed reproduction time”, and, if not, then proceeding to step xxi., and if it is yes, then proceeding
10 to the next step xviii.;

xviii. sending the message “update the elapsed reproduction time” to the server (1);

xix. waiting for a command from the server (1);

xx. executing the server command (1) and returning to the checking step of step xvi.;

xxi. if the pending asynchronous message in the checking step of step xvii. is not
15 “update the elapsed reproduction time”, then checking whether the same is “volume+” or “volume-”;

xxii. if the pending asynchronous message in the checking step of step xvii. is “update the elapsed reproduction time”, then sending that asynchronous message to the server (1);

20 xxiii. waiting for a command from the server (1);

xxiv. executing the command sent by the server (1), and returning to the checking step of step xi.;

xxv. if the asynchronous message is not “volume+” nor “volume-”, then sending that message to the server (1), and returning to the waiting step of step iii..

11. A process for music digitalization, storage, access and listening, the process for updating the central (or remote) server (1A), comprising the steps of:

i. checking whether there is any CD digitized in the local server or in the digitizing station that should be sent to the central (or remote) server;

ii. if there is there is any CD digitized in the local server or in the digitizing station that should be sent to the central (or remote) server, then the information in the CD and its song files are sent to the central (or remote) server, after which it returns to the checking step of step i.;

iii. if there is there is not any CD digitized in the local server or in the digitizing station that should be sent to the central (or remote) server, then checking whether the preset time was reached, and if not, then returning to the checking step of step i.;

iv. if the preset time was reached, then checking whether there is a CD in the list of CDs to be sent to the central (or remote) server in the preset time, and if not, then returning to the checking step of step i., and if yes, then proceeding to the flow executing step of step ii..

12. A process for music digitalization, storage, access and listening, the process for executing the download software , comprising the steps of:

i. checking whether there is a CD to be immediately brought from the central (or remote) server;

ii. if there is a CD to be immediately brought from the central (or remote) server, then checking whether the CD to be brought is present in the central (or remote) server;

5 iii. if no CD is present, then saving the data of the CD in the list of CDs to be brought in a preset time, and returning to the checking step of step i.;

iv. if the CD is present, then bringing the information in the CD and its song files from the central (or remote) server, and the same are recorded in the local server, returning to the checking step of step i.; if, in step i., there was not a CD to be immediately brought,
10 then proceeding to step v.;

v. checking whether the preset time was reached, and if not, then returning to the checking step of step i.;

vi. if a preset time was reached, then checking whether there is a CD in the list of CDs to be brought from the central (or remote) server, and if there is not, then returning to
15 the checking step of step i.;

vii. if there is a CD in the list of CDs to be brought from the central (or remote) server, then proceeding to executing step iv..

20